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(54) Title: HIGH THROUGHPUT DETECTION OF GLUTATHIONE S-TRANSFERASE POLYMORPHIC ALLELES

(57) Abstract: High throughput assays for detecting glutathione S-transferase polymorphic alleles are disclosed. The assays of the invention utilize a biological sample obtained from a patient. Genomic DNA is obtained from the biological sample. A portion of the DNA is amplified using PCR to detect GSTM1 alleles, a second portion of the DNA is amplified to detect GSTM3 and GSTT1 alleles, and another portion of the DNA is amplified to detect GSTP1 alleles. The PCR amplification products may then be combined, and the glutathione S-transferase polymorphic alleles may be detected based on PCR amplification product size differences and fluorescent tag differences. The assays of the invention are designed for high throughput use such as in large clinical trials. The assay generally circumvents the use of restriction endonucleases, while allowing all analyses to be performed simultaneously. In addition, the assay permits detection of all four clinically-significant GST polymorphic alleles.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/32765

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : C12Q 1/68; C12N 19/34; C07H 21/04

US CL : 435/6, 91.1, 91.2; 536/23.1, 24.3, 24.33

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/6, 91.1, 91.2; 536/23.1, 24.3, 24.33

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1130 112 A1 (EPIDAUROS BIOTECHNOLOGIE AG) 24 February 2000 (24.02.2000), see entire patent.	26, 29-32, 61, 65-67
X	FRYFR et al. Use of site-directed mutagenesis of allele-specific PCR primer to identify the GSTM1 A, GSTM1 B, GSTM1 AB and GSTM1 null polymorphisms at the glutathione S-transferase, GSTM1 locus. Biochemical Journal, Vol. 295, pages 313-315, 1993, see entire reference.	1-8, 11, 14, 17, 20-33, 35-43, 46, 49, 52, 55-61, 63-64, 66, 68, and 70
---		32, 65, 67
Y		
X	WO 02/08465 A1 (KELLER et al) 31 January (31.01.2002), see entire patent.	1-70

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.**\* Special categories of cited documents:****"A"** document defining the general state of the art which is not considered to be of particular relevance**"B"** earlier application or patent published on or after the international filing date**"L"** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)**"O"** document referring to an oral disclosure, use, exhibition or other means**"P"** document published prior to the international filing date but later than the priority date claimed**"T"**

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

**"X"**

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

**"Y"**

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

**"&"**

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Date of the actual completion of the international search

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**INTERNATIONAL SEARCH REPORT**

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**Continuation of B. FIELDS SEARCHED Item 3:**

SEQUENCE SEARCH: GENEMBL, GENESEQ, EST, PUBLISHED APPLICATION, ISSUED PATENTS, WEST, PUBMED, MEDLINE



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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